

### **REMARKS**

Please reconsider the application in view of the following remarks. Applicant thanks the Examiner for carefully considering this application.

#### **1. Disposition of Claims**

Claims 1-16 are pending in this application. Claim 1 is independent. The remaining claims depend, directly or indirectly, from claim 1.

#### **2. Claim Amendments**

Claim 1 has been amended to clarify the invention recited. Claim 16 has been added. Support for these amendments can be found, for example, in paragraphs [0024] – [0026] in the specification.

#### **3. Telephone Interview of April 3, 2006**

Applicant and his representative thank the Examiner for courtesies extended during a telephone interview conducted on April 3, 2006. During the interview, claim 1 is discussed with respect to the cited prior art references. Claim 1 has been amended in accordance with the Examiner's suggestion.

#### **4. Rejection(s) under 35 U.S.C § 103**

Claims 1-15 were rejected under 35 U.S.C. § 103(a) as being obvious over Fraivillig (U.S. Patent No. 6,015,607) ("the Fraivillig '607 patent") in view of Hoffmeyer (U.S. Patent No. 5,757,073). Claim 1 has been amended. To the extent that this rejection may still apply to the amended claims, this rejection is respectfully traversed.

The present invention relates to methods for manufacturing a flexible printed circuit bonded to a heat sink using a process that includes two bonding steps. Embodiments of the invention use an adhesive that is capable of being partially cured to form a B-staged adhesive. In the first step, such adhesives are partially cured and in the second step, the adhesives are fully-cured. A key feature is that the adhesive layer *remains partially cured (B staged)* during the period between the first and second lamination (adhering) steps such that other processings may be easily performed on the flexible circuit layer.

“B staged” is a term used in the adhesive art, referring to an intermediate state of an adhesive that can exist for a long duration, i.e., until it is fully activated (typically with high temperature and/or high pressure). It is not a fleeting moment between the uncured and cured states. B-staged adhesive can provide sufficient bonding (tack bond) for a period of time such that other processes may be performed, while the adhesive remains B staged.

As amended, claim 1 recites a two-step method, which includes the limitations: “in a first bonding step, adhering a conductive layer to a first surface of a bond film using a first adhesive layer to produce a circuit substrate, wherein the adhering does not cause full curing of a second adhesive layer on a second surface of the bond film such that the second adhesive layer is *B-staged*; after the first bonding step, processing the circuit substrate to produce the flexible printed circuit, wherein *the second adhesive layer remains B-staged during the processing.*”

Fraivillig ‘607 patent discloses *single-step methods* for making flexible laminates using a polyetherimide or a siloxane polyetherimide copolymer. (Abstract). The polyetherimide is incapable of being B staged, i.e., it cannot be partially cured because they will be fully cured upon activation. Hoffmeyer also fails to teach a two-step process that uses a B-staged adhesive.

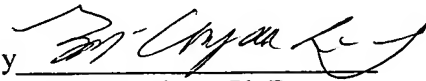
Because neither the Fraivillig ‘607 patent nor Hoffmeyer teaches or suggests the use of a B-staged adhesive in a two-step process, a combination of these references cannot render claim 1 obvious. Therefore, claim 1 is patentable over these two references. Claims 2-15 depend, directly or indirectly, from claim 1 and, therefore, are patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

**Conclusion**

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 07009.011002).

Dated: April 6, 2006

Respectfully submitted,

By   
T. Chyau Liang, Ph.D.  
Registration No.: 48,885  
OSHA · LIANG LLP  
1221 McKinney St., Suite 2800  
Houston, Texas 77010  
(713) 228-8600  
(713) 228-8778 (Fax)